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Analysis on compressor blading conditions of helicopter’s gas-Turbine engine working in polluted environment

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Abstract

© Research India Publications. Working in the dusty air pollution the air-gas channel of the engine is polluted. This results in deterioration of engine power plants. In this paper we present the results of studies of mass, density, thickness and microstructure of deposits on the rotor blades of a helicopter gas-turbine engine compressor having a nominal capacity of 883 kW after working 1500 h. The researches were conducted on ten blades of each stage. The blades were weighed before and after treatment, and then the averaged sludge mass was calculated. The results show that at the latter stages of the compressor deposit density was greater than at the first ones. Mode with full manifestation of roughness for a given engine is implemented in the first six stages of the compressor. It is concluded that the characteristics of the boundary layer and the value of the coefficient of friction on the surface of the blades are mostly influenced by the size of the arithmetic average height of irregularities Rz. The resulting data is used to develop methods of purifying of the compressor flow path.

Keywords

A helicopter blade, Deposits, Gas turbine engine (GTE)

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